REMARKS

In the Office Action of July 15, 2005, the Examiner included Notice to Comply with respect to sequence listings, requesting listings in a computer readable form and a paper copy.

Applicants respectfully direct the Examiner's attention to the Sequence Listing Submission filed January 12, 2005. By the date stamp of the returned post-card, the paper copy, CRF copy and copy of the Notice were received by the Office January 12, 2005. Accordingly, it is believed that these requirements have already been met.

With regard to the Examiner's concern regarding sequences of various mutants within the scope of the claimed invention, his attention is directed to the specification, for example, page 4, lines 6-10 and lines 14-16. Applicants have identified the availability of the complete sequences for EHV-1 and EHV-4 at the Gene Bank by accession number and have identified the location of the promoter where the mutation occurs as being between nucleotides 101600- 102347 and 12900-13505, respectively, for these viruses. The location of the endogenous promoter of the IE gene of EHV-1 is identified as being located between nucleotides 118590 and about 119890 in the inverted repeat of the short segment. With respect to deletion mutations, it is also set forth that deletions may be between 1 and about 500 bases at any position within the promoter region (page 4, lines 24-28). Insertion and substitution mutations also include the insertion or substitution of fragments of between 1 and about 500 bases (page 5, lines 5-14). It respectfully submitted that the novelty of the present invention results from a mutation in the IE promoter region. With respect to searching, it may be accomplished by focusing on EHV mutants with mutations in the IE promoter region.

All sequences recited in the present application are included in the sequence listing submission filed January 12, 2005. This is all that is required under 37 CRF 1.821 through

1.825, and those requirements have been met.

Claims 16-28 and 32-43 stand rejected under 35 USC 112, second paragraph for being indefinite. The Examiner has objected that it is not clear where the mutant sequences begin and where they end, alleging that it is very difficult to determine the boundaries of the claimed invention. The Examiner suggested that the claims should be identified by specific sequence identification number.

The rejection of claims 16-28 and 32-43 for being indefinite is respectfully traversed. Particularly with the present amendments, the claimed mutant is identified as having at least one mutation in the endogenous promoter region of the Immediate Early gene of EHV, whereby the level of expression of an essential gene located downstream from the mutation is reduced and the virulence of the EHV is attenuated. Support for this amendment is found in the specification, for example, on page 4, lines 16-20. The EHV sequences are known and available in the GeneBank, as noted above. Applicants have identified the location where a mutation must take place, and have provided the limitations understood by the ordinary practitioner. Within the invention, the mutation must cause the level of expression of an essential gene located downstream from the mutation to be reduced and the virulence of the EHV to be attenuated. These characteristics are easily determined by one of ordinary skill in the art. A practical search can be conducted, as mentioned above, by reviewing EHV mutants having mutations in the IE promoter region.

Claim 28 stands rejected under 35 USC 112, second paragraph being for incomplete for omitting central elements.

With the present amendments, claim 28 has been canceled without prejudice or disclaimer of the subject matter thereof. Accordingly, it is believed that this rejection is render moot.

Claims 16- 20 stand rejected to for being substantial duplicates of claims 32- 36.

Prior to the present amendments, claims 16 and 32 and the claims dependent thereon were distinguished by reciting in claim 32 that the equine herpesvirus was attenuated. With the present amendments this limitation is introduced into claim 16, and 32 -36 are canceled without prejudice or disclaimer of the subject matter thereof.

Claim 25 stands rejected under 35 USC 101 for being directed to non-statutory subject matter. The Examiner kindly suggested that the claim be amended to indicate that the nucleic acid molecule comprised by the host cell is an isolated nucleic acid molecule. This amendment has now been made.

Claims 16-43 stand rejected under 35 USC 112, first paragraph, for lack of enablement. The Examiner has objected that the disclosure does not reasonably enable a general EHV mutant comprising one or more deletions, substitutions, or insertions introduced into the endogenous promoter region, or an isolated nucleic acid molecule deletion in the IE gene. The Examiner has objected that each mutation, deletion, or insertion is different and presumably has different effects on interaction, antigenicity and virulence of the virus. He observed that the effects of the mutations, insertion, or deletions are unpredictable and that the modifications at one location do not teach or suggest effects at a different location. A general mutation, insertion, or deletion may not do anything to the virus infectivity or may disable the virus, or may make it more infectious, it is alleged. The Examiner concluded that to practice the full scope of the claimed invention, the ordinary practitioner would be required to conduct a large quantity of undue experimentation.

With the present amendments, it is respectfully submitted that the objection under 35 USC 112, first paragraph, is over come.

Claim 16, the basic claim, is directed to an equine herpes virus mutant having at least one mutation in the Immediate Early gene, whereby the level the expression of an essential gene located downstream from the mutation is reduced and virulence of the EHV is attenuated. It is respectfully submitted that one of ordinary skill in the art, provided with the teachings of the specification, could practice the invention as claimed without undue experimentation. The skilled practitioner may conduct a substantial amount of experimentation as long as the skill in the art combined with the teachings of the specification and the limitations of the claim provide guidance sufficient to permit the skilled practitioner to perform the invention and recognize when it is obtained. Substantial experimentation is permitted as long as it is routine.

"The determination of what constitutes undue experimentation in a given case requires the application of a standard of reasonableness, having due regard for the nature of the invention and the state of the art.... The test is not merely quantitative, since a considerable amount of experimentation is permissible, if it is merely routine, or the specification in question provides a reasonable amount of guidance with respect to the direction in which the experimentation should proceed" (In re Wands, 8 USPQ2d 1400, 1404).

"Factors to be considered in determining whether a disclosure would require undue experimentation have been summarized by the Board in *Ex parte Forman*. They include (1) quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, (8) the bredth of the claims." (In re Wands, ibid).

Considering the "Wands" factors, introducing a deletion, substitution, or insertion at a particularly site in a defined gene is well within the skill of the art. It can be accomplished using routine procedures at the locations taught in the specification and the examples. The quantity of the experimentation would be routine for one of ordinary skill making a gene modification and guidance is presented. Moreover, working examples are present in the specification to further enable the skilled practitioner to practice the invention. The invention is an equine herpes virus mutant, with a mutation in a specific location. Accordingly, the invention is relatively straight forward and the state of the prior art is such that the skilled practitioner, who in this art is highly skilled, could practice the invention. Moreover, although the outcome is not necessarily certain when beginning, that is, whether or not the expression of an essential gene downstream from the mutation would be reduced, yet expressed, and the virulence of the virus attenuated in every case, these results are easily measured and recognized by those of ordinary skill. It is believed that the practice of the invention within the scope of the claims as now amended is fully enabled. The skilled practitioner is clearly taught how to make the invention and how to determine whether or not resulting virus mutant was within scope of the present claims.

Claims 16-43 stand rejected under 32 USC 112, first paragraph, for not sufficiently describing at the time the application was filed that applicants had possession of the claimed invention. Except for the deletion of 106 nucleic acids in the IE promoter region of EHV-1 and the formation EHV 23 plasmid, no other sequences of EHV are disclosed. No host cells, no recombinant molecules comprising EHV, no attenuated EHV mutant or mutant virus were said to be disclosed. The Examiner has asserted that there is not enough information in the literature to guide the ordinary skilled practitioner to predict the undisclosed regions and further has asserted that if applicants did not possess the products they were not in possession of the method because the product is necessary for practicing the broad method.

The rejection regarding written description under 35 USC 112, first paragraph, is respectfully traversed. As set forth above, applicants assert their description is fully enabled. As a separate consideration, it is submitted that applicants have also provided a full description of their invention. As now claimed, applicants invention is directed to equine herpes virus mutants having a mutation in the Immediate Early gene. This is described, in fact the area where the mutation must take place is designated, in the description of the invention on page 4 of the specification. This description continues on through page 8. Furthermore, the invention is described, clearly identifying the possession of the invention in the gene map provided in the figures. Specifically, Example 2, beginning on page 12, describes introducing a deletion modification in the promoter of the Immediate Early gene.

In view of the above is submitted claims 16, 17, 19-27, 29, 30 and 37-43, all the claims presently in the case, are condition for allowance. Favorable action is solicited.

Should the Examiner should consider that a conference would be helpful in advancing the prosecution of this application, he is invited to telephone Applicants' attorney at the number below.

If necessary, the Commissioner is hereby authorized in this concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2334 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17.

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Respectfully submitted,

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I certify that this correspondence is being sent via facsimile on **December 7, 2005** to facsimile no. **(571) 273-8300** to the attention of **Examiner Salimi, Ali Reza, Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.**